

IN THE DRAWINGS:

The attached drawing sheets 2/11, 3/11, 5/11, and 11/11 include changes to Fig. 2, 3, 4, 7, and 14.

FIG. 2 has been amended. The channels 111 and lift pins 114 have been moved to be aligned with the channels 117. Support for the amendment is shown in Figs. 9-13.

FIG. 3 has been amended. Previously omitted element 124 has been added.

FIG. 4 has been amended. Previously omitted element 124 has been added.

FIG. 7 has been amended. Previously omitted elements 205 and 118 have been added.

FIG. 14 has been amended. Previously omitted element 418 has been added.

Applicant respectfully request withdrawal of the objections to FIGS. 3, 4, 7, and 14.

Attachment: Replacement Sheet 2/11, 3/11, 5/11, and 11/11
Annotated Sheet Showing Changes 2/11, 3/11, 5/11, and 11/11

REMARKS

This is intended as a full and complete response to the Office Action dated September 16, 2005, having a shortened statutory period for response set to expire on December 16, 2005. Claims 1-34 remain pending in the application and are shown above. Claims 1-34 stand rejected by the Examiner. Reconsideration of the rejected claims is requested for reasons presented below.

In the specification, the paragraphs [0020], [0037], [0043], and [0048] have been amended to correct minor editorial problems.

In the drawings, Figures 2, 3, 4, 7, and 14, have been amended with the respective replacement sheets included in this response. For a detailed discussion of the changes, please see the Drawings section of the response, beginning at page 10.

Claims 1, 5-9, 12, 13, 17-21, 28-32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Wang et al* (U.S. Patent No. 6,537,011) in view of *Stevens et al* (U.S. Patent No. 5,632,873) and *Takagi* (U.S. Patent No. 6,676,759). The Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a two ring structure of *Stevens et al* in the apparatus of *Wang et al*. The Examiner further asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a semi-circular shape as taught by *Takagi* in the apparatus of *Stevens et al* and *Wang et al*. The Applicant respectfully traverses this rejection.

Wang et al discloses a pedestal having one or more pedestal support members, and a single ring having a base plate defining an opening and one or more substrate support members mounted on the base plate. A portion of the pedestal and the support ring form a substrate supporting assembly. (See, Col. 4, line 51, to Col. 5, line 54; Figure 2).

Stevens et al discloses a substrate shield and ring assembly, a clamp ring, for a deposition chamber with the ring shielding an outer portion of the substrate edge to prevent material from being deposited on the edge of the substrate during a physical vapor deposition or chemical vapor deposition process. A substrate rests on a support member (a pedestal), and the ring is deposited over an outer portion of the substrate.

(See, Col. 6, line 60, to Col. 8, line 44; Figure 2). There is no suggestion or motivation in either *Stevens et al* or *Wang et al* to combine the deposition clamp ring disposed over a substrate resting on a pedestal of *Stevens et al* with the pedestal and support ring for supporting a substrate thereon of *Wang et al*.

Takagi discloses a wafer support body and a series of lift pins to lift the support body for lifting a substrate with minimal direct contact by the lift pins over a susceptor. The susceptor has a recess formed therein for supporting a substrate and the susceptor also has a groove for the wafer support body. The design of the susceptor for when the substrate is kept all the members in a down position provides that the substrate is supported by the susceptor. (See, Col. 3, line 11, to Col. 4, line 62; Figures 2-4)

The combination of *Stevens et al* or *Wang et al* is described above. Further there is no suggestion or motivation in the references to combine the susceptor recess and support body apparatus of *Takagi* with the asserted combination of deposition clamp ring disposed over a substrate resting on a pedestal of *Stevens et al* with the pedestal and support ring for supporting a substrate thereon of *Wang et al*.

Thus, the combination of *Stevens et al* and *Wang et al*, and the combination of *Stevens et al*, *Wang et al*, and *Takagi*, does not teach show or suggest a cover ring comprising a base having a bore disposed therethrough, the base having an upper surface and one or more raised surfaces disposed adjacent the bore, wherein the raised surface comprise one or more first substrate support members disposed adjacent an edge of the bore and a capture ring disposed on the cover ring, the capture ring comprising a semi-circular annular ring having an inner perimeter corresponding to the bore of the cover ring and one or more second substrate support members disposed on the inner perimeter and adapted to receive a substrate, wherein the capture ring is adapted to mate with the cover ring and form one contiguous raised surface on the cover ring, as recited in claim 1 and claims dependent thereon. Withdrawal of the rejection is respectfully requested.

The combination of *Stevens et al* and *Wang et al*, and the combination of *Stevens et al*, *Wang et al*, and *Takagi*, does not teach show or suggest an enclosure defining a process region and a pedestal disposed in the enclosure, the pedestal comprising a support surface, a cathode disposed in the support surface, a cover ring

coupled to the support surface, the cover ring comprising a cover ring comprising a base having a bore disposed therethrough, the base having an upper surface and one or more raised surfaces disposed adjacent the bore, wherein the raised surface comprise one or more first substrate support members disposed adjacent an edge of the bore and a capture ring disposed on the cover ring, the capture ring comprising a semi-circular annular ring having an inner perimeter corresponding to the bore of the cover ring and one or more second substrate support members disposed on the inner perimeter and adapted to receive a substrate, wherein the capture ring is adapted to mate with the cover ring and form one contiguous raised surface on the cover ring, as recited in claim 13 and claims dependent thereon. Withdrawal of the rejection is respectfully requested.

The combination of *Stevens et al* and *Wang et al*, and the combination of *Stevens et al*, *Wang et al*, and *Takagi*, does not teach show or suggest a transfer chamber, at least one processing chamber having a pedestal comprising a support surface having lift pins displaceable therethrough, a cathode disposed in the support surface, a cover ring coupled to the support surface, the cover ring comprising a cover ring comprising a base having a bore disposed therethrough, the base having an upper surface and one or more raised surfaces disposed adjacent the bore, wherein the raised surface comprise one or more first substrate support members disposed adjacent an edge of the bore and a capture ring disposed on the cover ring, the capture ring comprising a semi-circular annular ring having an inner perimeter corresponding to the bore of the cover ring and one or more second substrate support members disposed on the inner perimeter and adapted to receive a substrate, wherein the capture ring is adapted to mate with the cover ring and form one contiguous raised surface on the cover ring, one or more loadlock chambers, and a substrate handler disposed in the transfer chamber, as recited in claim 24 and claims dependent thereon. Withdrawal of the rejection is respectfully requested.

Claims 2-4, 14-16, 25-27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Wang et al* (U.S. Patent No. 6,537,011) in view of *Stevens et al* (U.S. Patent No. 5,632,873) and *Takagi* (U.S. Patent No. 6,676,759) as applied to claims 1, 13, 25 and further in view of *Warner et al* (U.S. Patent No. 2,639,392). The Examiner further asserts that it would have been obvious to one of ordinary skill in the art at the

time the invention was made to use a cover ring with a raised surface of arcuate shape as taught by *Warner* in the apparatus of *Takagi*, *Stevens et al*, and *Wang et al*. The Applicant respectfully traverses this rejection.

Takagi, *Stevens et al*, and *Wang et al*., and the respective combinations, are described above.

Warner describes the manufacturing of piezo-electric crystals with a mask to be applied to the crystal so that the crystal determines the alignment of the mask and the location of a loading coating. The mask face plate apertured to define an area to be plated with the loading coating. The crystal is supported by a lip and encased with a shoulder formed on the mask. There is no suggestion or motivation in the references to combine the plate design for forming piezo-electric crystals of *Warner* with the Examiner's asserted combination of the susceptor recess and support body apparatus of *Takagi*, the deposition clamp ring disposed over a substrate resting on a pedestal of *Stevens et al*, and the pedestal and support ring for supporting a substrate thereon of *Wang et al*.

The combination of *Warner*, *Takagi*, *Stevens et al*, and *Wang et al*, does not teach, show, or suggest a cover ring comprising a base having a bore disposed therethrough, the base having an upper surface and one or more raised surfaces disposed adjacent the bore, wherein the raised surface comprise one or more first substrate support members disposed adjacent an edge of the bore and a capture ring disposed on the cover ring, the capture ring comprising a semi-circular annular ring having an inner perimeter corresponding to the bore of the cover ring and one or more second substrate support members disposed on the inner perimeter and adapted to receive a substrate, wherein the capture ring is adapted to mate with the cover ring and form one contiguous raised surface on the cover ring, as recited in claim 1 and claims 2-4 dependent thereon. Withdrawal of the rejection is respectfully requested.

The combination of *Warner*, *Takagi*, *Stevens et al*, and *Wang et al* does not teach show or suggest an enclosure defining a process region and a pedestal disposed in the enclosure, the pedestal comprising a support surface, a cathode disposed in the support surface, a cover ring coupled to the support surface, the cover ring comprising a cover ring comprising a base having a bore disposed therethrough, the base having an

upper surface and one or more raised surfaces disposed adjacent the bore, wherein the raised surface comprise one or more first substrate support members disposed adjacent an edge of the bore and a capture ring disposed on the cover ring, the capture ring comprising a semi-circular annular ring having an inner perimeter corresponding to the bore of the cover ring and one or more second substrate support members disposed on the inner perimeter and adapted to receive a substrate, wherein the capture ring is adapted to mate with the cover ring and form one contiguous raised surface on the cover ring, as recited in claim 13 and claims 14-16 dependent thereon. Withdrawal of the rejection is respectfully requested.

The combination of *Warner*, *Takagi*, *Stevens et al*, and *Wang et al* does not teach show or suggest a transfer chamber, at least one processing chamber having a pedestal comprising a support surface having lift pins displaceable therethrough, a cathode disposed in the support surface, a cover ring coupled to the support surface, the cover ring comprising a cover ring comprising a base having a bore disposed therethrough, the base having an upper surface and one or more raised surfaces disposed adjacent the bore, wherein the raised surface comprise one or more first substrate support members disposed adjacent an edge of the bore and a capture ring disposed on the cover ring, the capture ring comprising a semi-circular annular ring having an inner perimeter corresponding to the bore of the cover ring and one or more second substrate support members disposed on the inner perimeter and adapted to receive a substrate, wherein the capture ring is adapted to mate with the cover ring and form one contiguous raised surface on the cover ring, one or more loadlock chambers, and a substrate handler disposed in the transfer chamber, as recited in claim 24 and claims 25-27 dependent thereon. Withdrawal of the rejection is respectfully requested.

Claims 10, 11, 22, 23, 33, 34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Wang et al* (U.S. Patent No. 6,537,011) in view of *Stevens et al* (U.S. Patent No. 5,632,873) and *Takagi* (U.S. Patent No. 6,676,759) as applied to claims 1, 13, 25 and further in view of *Roderick et al* (U.S. Patent No. 6,074,488). The Examiner further asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a cover ring made from an etch resistant material

as taught by *Roderick et al* in the apparatus of *Takagi, Stevens et al*, and *Wang et al*. The Applicant respectfully traverses this rejection.

Takagi, Stevens et al, and *Wang et al*., and the respective combinations, are described above.

Roderick et al describes a collar ring made of suitable dielectric ceramic materials that materials are sufficiently thin to provide an RF electrical field absorption sufficiently low to capacitively couple RF power from the peripheral portion of the conductor through the collar ring to the plasma at RF frequencies of about 1 to about 20 MHz. The collar ring comprises an annular ring that covers the peripheral portion of the conductor and supports a substrate during processing. There is no suggestion or motivation in the references to combine the dielectric collar ring plate design of *Roderick et al* with the Examiner's asserted combination of the susceptor recess and support body apparatus of *Takagi*, the deposition clamp ring disposed over a substrate resting on a pedestal of *Stevens et al*, and the pedestal and support ring for supporting a substrate thereon of *Wang et al*.

The combination of *Roderick et al*, *Takagi, Stevens et al*, and *Wang et al*, does not teach, show, or suggest a cover ring comprising a base having a bore disposed therethrough, the base having an upper surface and one or more raised surfaces disposed adjacent the bore, wherein the raised surface comprise one or more first substrate support members disposed adjacent an edge of the bore and a capture ring disposed on the cover ring, the capture ring comprising a semi-circular annular ring having an inner perimeter corresponding to the bore of the cover ring and one or more second substrate support members disposed on the inner perimeter and adapted to receive a substrate, wherein the capture ring is adapted to mate with the cover ring and form one contiguous raised surface on the cover ring, as recited in claim 1 and claims 10-11 dependent thereon. Withdrawal of the rejection is respectfully requested.

The combination of *Roderick et al*, *Takagi, Stevens et al*, and *Wang et al* does not teach show or suggest an enclosure defining a process region and a pedestal disposed in the enclosure, the pedestal comprising a support surface, a cathode disposed in the support surface, a cover ring coupled to the support surface, the cover ring comprising a cover ring comprising a base having a bore disposed therethrough, the

base having an upper surface and one or more raised surfaces disposed adjacent the bore, wherein the raised surface comprise one or more first substrate support members disposed adjacent an edge of the bore and a capture ring disposed on the cover ring, the capture ring comprising a semi-circular annular ring having an inner perimeter corresponding to the bore of the cover ring and one or more second substrate support members disposed on the inner perimeter and adapted to receive a substrate, wherein the capture ring is adapted to mate with the cover ring and form one contiguous raised surface on the cover ring, as recited in claim 13 and claims 22-23 dependent thereon. Withdrawal of the rejection is respectfully requested.

The combination of *Roderick et al*, *Takagi*, *Stevens et al*, and *Wang et al* does not teach show or suggest a transfer chamber, at least one processing chamber having a pedestal comprising a support surface having lift pins displaceable therethrough, a cathode disposed in the support surface, a cover ring coupled to the support surface, the cover ring comprising a cover ring comprising a base having a bore disposed therethrough, the base having an upper surface and one or more raised surfaces disposed adjacent the bore, wherein the raised surface comprise one or more first substrate support members disposed adjacent an edge of the bore and a capture ring disposed on the cover ring, the capture ring comprising a semi-circular annular ring having an inner perimeter corresponding to the bore of the cover ring and one or more second substrate support members disposed on the inner perimeter and adapted to receive a substrate, wherein the capture ring is adapted to mate with the cover ring and form one contiguous raised surface on the cover ring, one or more loadlock chambers, and a substrate handler disposed in the transfer chamber, as recited in claim 24 and claims 33-34 dependent thereon. Withdrawal of the rejection is respectfully requested.

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed.

The secondary references made of record are noted. However, it is believed that the secondary references are no more pertinent to the Applicant's disclosure than the primary references cited in the office action. Therefore, Applicant believes that a detailed discussion of the secondary references is not necessary for a full and complete response to this office action.

Having addressed all issues set out in the office action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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ANNOTATED SHEET SHOWING CHANGES

ATTY DKT. No.: APPM/008348/MASK/MASK-ETCH/ARNOLD S
 U.S. SERIAL No.: 10/689,783 CONF. No.: 7569
 FILED: OCTOBER 21, 2003
 APPLICANT: APPLIED MATERIALS, INC.
 TITLE: MASK ETCH PROCESSING APPARATUS
 INVENTORS: NGUYEN, ET AL. PAGE 2 OF 11

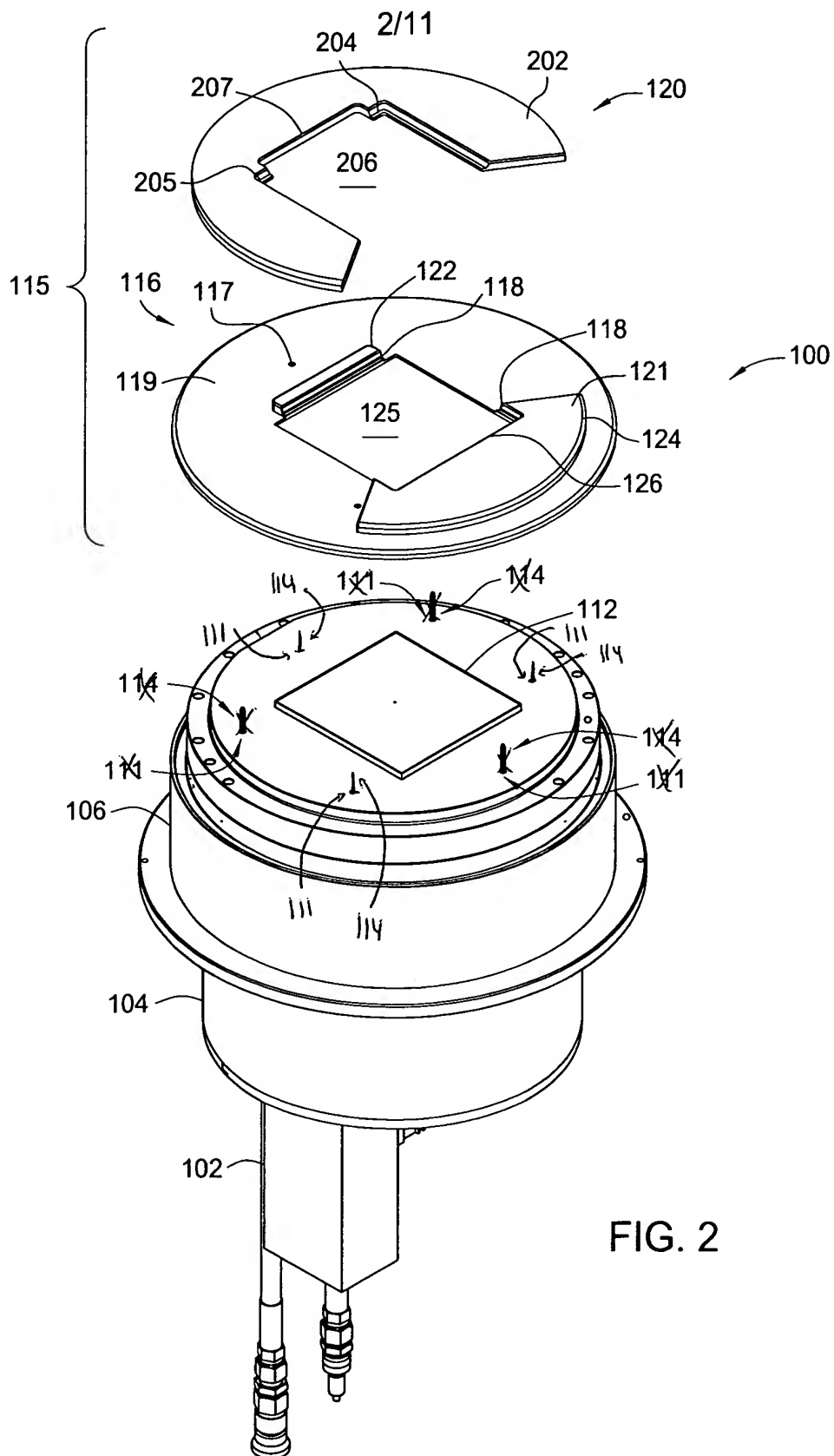


FIG. 2

ATTY DKT. No.: APPM/008348/MASK/MASK-ETCH/ARNOLD S
U.S. SERIAL No.: 10/689,783 CONF. No.: 7569
FILED: OCTOBER 21, 2003
APPLICANT: APPLIED MATERIALS, INC.
TITLE: MASK ETCH PROCESSING APPARATUS
INVENTORS: NGUYEN, ET AL. PAGE 3 OF 11

3/11

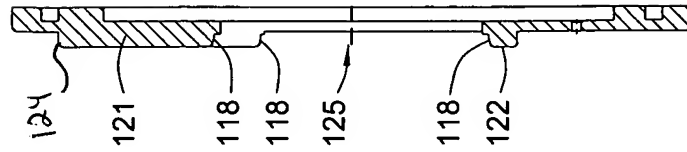


FIG. 4

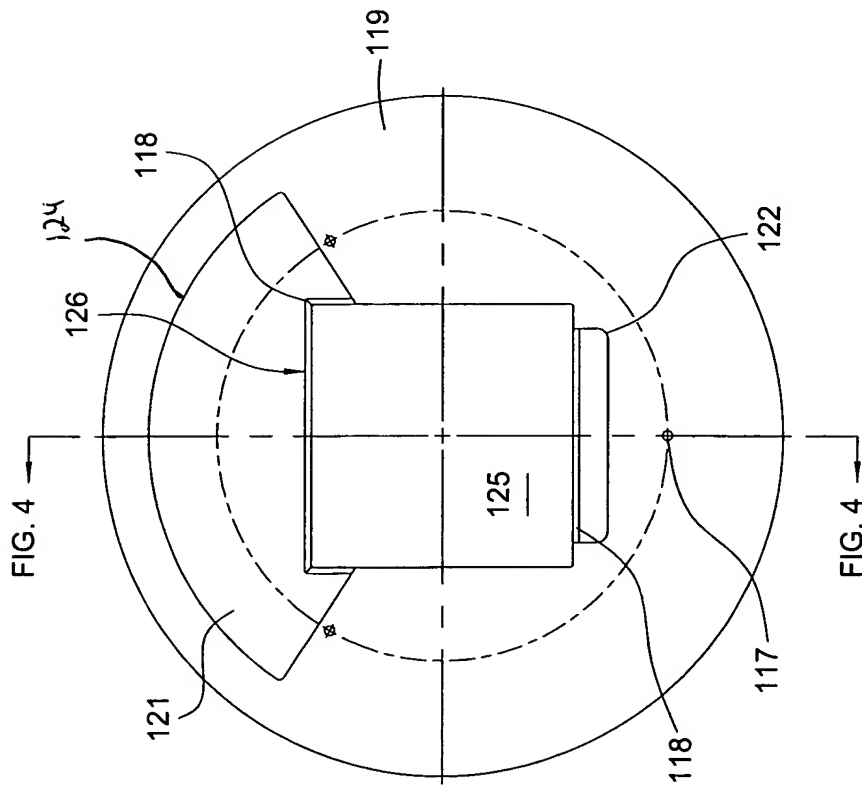


FIG. 3

ATTY DKT. No.: APPM/008348/MASK/MASK-ETCH/ARNOLD S
 U.S. SERIAL No.: 10/689,783 CONF. No.: 7569
 FILED: OCTOBER 21, 2003
 APPLICANT: APPLIED MATERIALS, INC.
 TITLE: MASK ETCH PROCESSING APPARATUS
 INVENTORS: NGUYEN, ET AL. PAGE 5 OF 11

5/11

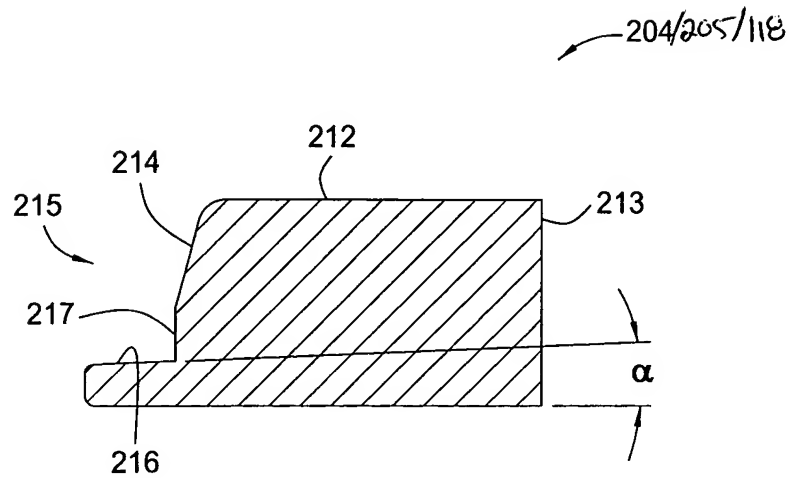


FIG. 7

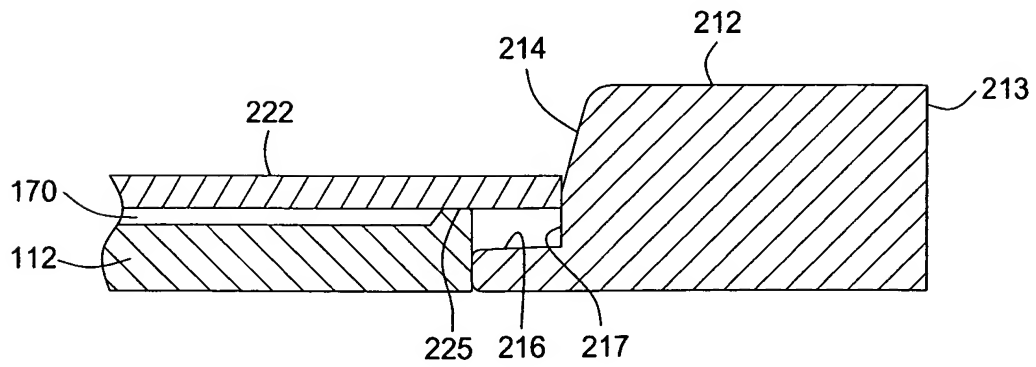


FIG. 8

ATTY DKT. No.: APPM/008348/MASK/MASK-ETCH/ARNOLD S
 U.S. SERIAL No.: 10/689,783 CONF. No.: 7569
 FILED: OCTOBER 21, 2003
 APPLICANT: APPLIED MATERIALS, INC.
 TITLE: MASK ETCH PROCESSING APPARATUS
 INVENTORS: NGUYEN, ET AL. PAGE 11 OF 11

11/11

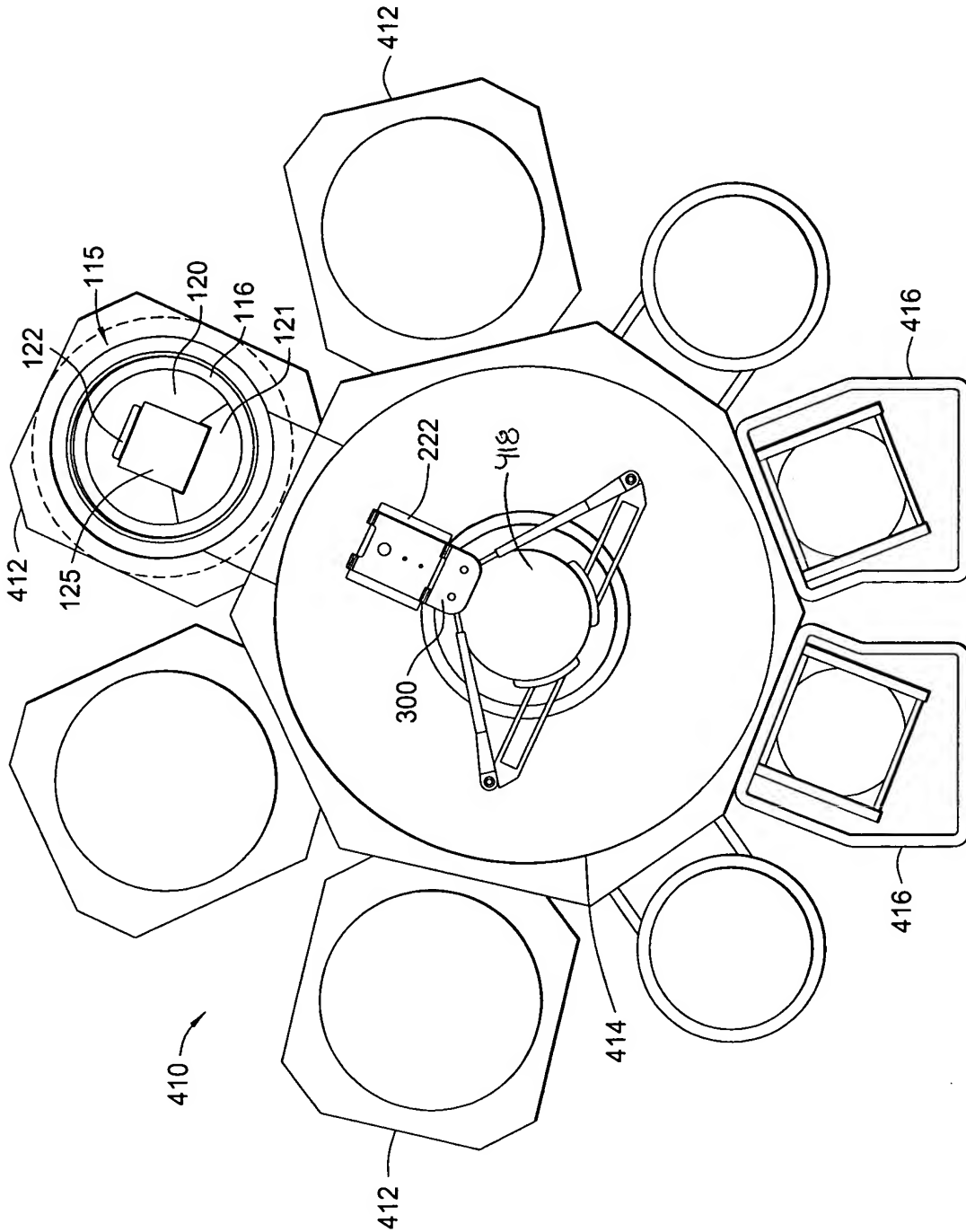


FIG. 14